Public Officials

PO-SIR-1

Ref: HECO's research on Alternative Alignment 1, Item 3.2.2.1.1., page 3-45 in the Draft Environmental Assessment

a. Please produce all studies, reports, analyses, survey and other research concerning Alternative Alignment 1, Item 3.2.2.1.1, page 3-45 in its Draft Environmental Assessment that HECO has obtained, considered and/or compiled.

HECO Response:

a. HECO has voluminous drawings, analysis and worksheets regarding Alternative Alignment 1. Such information may be in various locations and with various individuals within the Company.

HECO objects to this information request on the grounds that (1) it is overly broad and unduly burdensome to produce a copy of "all" studies, reports, analyses, surveys and other research concerning Alternative Alignment 1, considered and/or compiled; and (2) the terms "studies," "reports," "analyses," "surveys," and "other research" are vague and ambiguous and no definition of these terms has been provided. HECO also objects to this request to the extent it may encompass documents protected by the attorney-client privilege or the attorney work product doctrine. Nonetheless, without waiving its objections, HECO has expended time and effort in identifying responsive documents.

In order to be responsive to this request, HECO has (1) designated categories of documents that might be deemed to fall within the scope of this request, (2) provided partial lists of documents falling within each category, and (3) identified the manner in which HECO is willing to make such documents available.

HECO's responses and objections with respect to each category of documents are addressed below:

A. Drawings

HECO reviewed numerous drawings that show existing and future facilities within the Alternative Alignment 1 area. These drawings were created by HECO, other utilities or City agencies that utilize the street right-of-ways for their facilities. A list of these drawings is included as attached page 4.

Please contact George Hirose at 543-4787 to make arrangements for a review of these drawings at HECO's Regulatory Affairs Office. The drawings will be made available for review three business days after a request is received.

B. Worksheets

In researching the feasibility of Alternative Alignment 1, numerous draft drawings, documents and worksheets were produced. HECO objects to providing this information request which seeks all research that was written or submitted on the grounds that it would be unduly burdensome and onerous. No records were kept on the number of working documents, worksheets and calculations that were made. Without waiving any objections, "key" worksheets and drawings used in the analysis of Alternative Alignment 1 are available for review. Please contact George Hirose at 543-4787 to make arrangements for a review of these documents at HECO's Regulatory Affairs Office. The documents will be made available for review three business days after a request is received. A list of worksheets and reference material is included as attached page 5.

B. Analyses

A Socioeconomic Impact Assessment was performed for the Proposed Action as well as Alternative Alignment 1. The results of this analysis appear in section 4.12.1 of the East Oahu Transmission Project 46kV Phased Project Draft Environmental

Assessment. The complete report was not made a part of the East Oahu Transmission Project 46kV Phased Project Draft Environmental Assessment as the document in its written form was not completed at the time of publication; however, this document is now available for review.

Please contact George Hirose at 543-4787 to make arrangements for a review of the document at HECO's Regulatory Affairs Office. The document will be made available for review three business days after a request is received.

A magnetic field evaluation prepared by Enertech Consultants of Santa Clara California, Inc. describing the expected and projected magnetic field levels appears in Appendix D of the East Oahu Transmission Project 46kV Phased Project Draft Environmental Assessment. This analysis, originally prepared for the proposed action, is currently being expanded to include locations along Alternative Alignments 1 and 2. This analysis is currently in progress and will be incorporated in the East Oahu Transmission Project 46kV Phased Project Final Environmental Assessment.

East Oahu Transmission Project
Drawings

Drawing	Title Line 1	Title Line 2	Title Line 3	Created By
15112	Pawaa Kai	Makaloa St	Underground Lines 12kv	HECO
23334	Kalakaua Avenue Ductline	Between Fern St & Kapiolani Blvd	Underground Ductline 12kv	HECO
78931	Kewalo Kamoku 138kv/25kv	Plan & Profile - HCC	138kv Underground Ductline	HECO
74302	Kewalo Kamoku 138kv/25kv	Plan & Profile Sta 40+00 to 45+00	138kv Underground Ductline	HECO
74304	Kewalo Kamoku 138kv/25kv	Plan & Profile Sta 53+92.18 to 55+00	138kv Underground Ductline	HECO
74305	Kewalo Kamoku 138kv/25kv	Plan & Profile Sta 55+00 to 60+00	138kv Underground Ductline	HECO
74306	Kewalo Kamoku 138kv/25kv	Plan & Profile Sta 60+00 to 65+00	138kv Underground Ductline	HECO
23261	Pawaa Kai Improvement District	Alternate "B" - Plan & Profile	Underground Ductline 12kv	HECO
23262	Pawaa Kai Improvement District	Alternate "B" - Plan & Profile	Underground Ductline 12kv	HECO
23263	Pawaa Kai Improvement District	Alternate "B" - Plan & Profile	Underground Ductline 12kv	HECO
15212	Fern St Duct Line	Hauoli St and Lime St	Underground Duct Lines - 46kv	HECO
16509	McCully - Lime Streets Ductline	Plan, Profile & Sections	Underground Ductlines 46kv	HECO
28611	Kalakaua Avenue & Kalauokalani Way	McCully 12 kV Conversion Phase #1	12 kV OH	HECO
16938	McCully to Makaloa Sub	46 kV Routing	46kV UG Ductline	HECO
75678	Atkinson Ckt Reconductor	MH526 to MH533 Kapiolani Blvd	12kV Underground	HECO
75677	Atkinson Ckt Reconductor	McCully Sub to MH534 Kapiolani Blvd	12kV Underground	HECO
15162	Kapiolani Blvd Ductline	Kapiolani Blvd & Atkinson Drive	UG Ductlines - 12 kV	HECO
16986	Cable Feeders from McCully & Makaloa Substations	UG Lines - 12 kV		HECO
100805	Kewalo A & B 25 kV UG Piikoi	Plan-Mahukona St to McCully St	25kV UG	HECO
N/A	Topographic Survey	East Oahu 138kv Transmission Project	Sheridan St to McCully Substation	ParEn
BK-11	12-in Waterline "A"	Plan and Profile: 50+20 to 55+10		Dept. of Design and Construction C&C of Honolulu
BK-12	12-in Waterline "A"	Plan and Profile: 55+10 to 59+60		Dept. of Design and Construction C&C of Honolulu
BK-13	12-in Waterline "A"	Plan and Profile: 59+60 to 62+44+/-		Dept. of Design and Construction C&C of Honolulu
2-36-2-35	Frontage Improvement No. 55	Kapiolani Boulevard Paving	Kalakaua Avenue to McCully Street Plan and Profile	Office of the City & County Engineer
3-42-2-3	Job 84-16	Kapiolani Boulevard: Installation of 12-Inch	Water Main From Kalakaua Avenue to McCully Street	Board of Water Supply
3-45-2-11	Phase 4	Pumehana St 8-inch Water Main		Board of Water Supply
16534	Kalakaua Sands	1670 Kalakaua Ave	3 Ph Padmount Transf. 12.47 kV	HECO
15107	Makaloa & Kaheka St.	Manhole P.3 Electrical	Manholes	HECO
15108	Makaloa St.	Manhole P.4 Electrical	Manholes	HECO
15109	Kalakaua Ave. & Makaloa St.	Manhole P.5 Electrical	Manholes	HECO
15110	Kalakaua Ave. & Fern St.	Manhole P.6 Electrical	Manholes	HECO
15111	Punahou & Fern St.	Manhole P.7 Electrical	Manholes	HECO
15237	Fern & Hauoli St.	Manhole P.8 Electrical	Manholes	HECO
15238	Lime & Hauoli St.	Manhole P.9 Electrical	Manholes	HECO
15239	Lime St.	Manhole P.10 Electrical	Manholes	HECO
26898	Kalakaua Ave.	JP.41 to JP.49	4kV OVHD & UG & Secondary UG	HECO
Sheet 2 of 3	Job 165W Installation of C.I. Water Mains	Installation of C.I. Water Mains And Appurtenances	Kalauokalani Way Kalakaua Ave. to Kapiolani Blvd.	Board of Water Supply

Title	Description	Created By
HECO Underground Standards	Design Standards	HECO
HECO Overhead Standards	Design Standards	HECO
Kapiolani Boulevard Detailed Tasks	List of Required Tasks	HECO
Kapiolani Boulevard Route EA Revisions	Proposed Draft EA Revisions	HECO
Kapiolani Boulevard Alternative Routes	List of Required Tasks	HECO
Summary of Project Changes Round 2	EMF Analysis Data	HECO
Drawing Transmittal	Transmitting Drawings to Enertech for EMF Analysis	HECO
EMF Loads	Loading Data for EMF Analysis	HECO
Location-M	Photograph	HECO
Location-N	Photograph	HECO
Location-P	Photograph	HECO
Location-Q	Photograph	HECO
Location-R	Photograph	HECO
Round 2	Draft EMF Measurement Locations	HECO
Round 2	Draft EMF Measurement Locations	HECO
Socioeconomic Costs 2	Costs Data for Socioeconomic Study	HECO

PO-SIR-2

Ref: HECO's actions in considering Alternative Alignment 1, Item 3.2.2.1.1., page 3-45 in the Draft Environmental Assessment as a potential transmission line alignment

a. Please produce copies of all communications and correspondence between (1) HECO, its officers, employees, and agents and (2) any government official or entity concerning Alternative Alignment 1, Item 3.2.2.1.1, page 3-45 in its Draft Environmental Assessment.

b. Please produce copies of all documents demonstrating how HECO calculated the costs of Alternative Alignment 1, Item 3.2.2.1.1, page 3-45 in its Draft Environmental Assessment, and any anticipated savings to be incurred by scheduling the East Oahu Transmission Project concurrently with the City and County of Honolulu Kapiolani Area Revised Sewer System Project and/or the Honolulu Board of Water Supply Kapiolani Boulevard Water Line Project.

c. Please produce copies of all documents that describe, clarify or explain all actions that HECO may take to utilize Alternative Alignment 1, Item 3.2.2.1.1, page 3-45 in its Draft Environmental Assessment as a potential transmission line alignment.

HECO Response:

a. HECO objects to this information request on the grounds that (1) it is overly broad and unduly burdensome to produce a copy of "all communications and correspondence between (1) HECO, its officers, employees, and agents and (2) any government official or entity concerning Alternative Alignment 1;" and (2) the term "communications" is vague and ambiguous and no definition of this term has been provided. Without waiving its objections, HECO is providing a copy of the following communications/correspondence between HECO and its representatives and "government officials" or "government entities" concerning Alternative Alignment #1.

   1. Meeting Minutes of meeting between HECO, Belt Collins (HECO's Environmental Assessment consultant), and various City agencies dated March 18, 2004. (See attached pages 6-10.)

   2. Letter from HECO to Senator Carol Fukunaga dated December 15, 2003, (similar letters

were sent to Representative Scott Saiki and Councilmember Ann Kobayashi). (See attached pages 11-12.)

3. Letter from Senator Carol Fukunaga, Representative Scott Saiki, and Councilmember Ann Kobayashi to HECO dated December 1, 2003. (See attached page 13.)
4. Letter from Senator Carol Fukunaga, Representative Scott Saiki, and Councilmember Ann Kobayashi to HECO dated October 8, 2004. (See attached page 14-20.)

b. The cost for Alternative Alignment 1 was calculated based on the estimated length of ductline required for construction and an estimated cost per foot for similar ductline construction in a similar environment. Length and cost per foot (based on the cost of installing new ducts from the Makaloa Substation to the McCully Substation) is as follows:

Length: 3,800 feet

Cost per foot: $1,100/foot

Please see attached page 21 for the workpapers.

HECO has reviewed the scope of the City and County of Honolulu's Kapiolani Revised Sewer System Project ("City Sewer Project") and/or the Honolulu Board of Water Supply Kapiolani Water Line Project ("BWS Water Project") and has been in contact with the City and BWS with respect to their projects. Based on HECO's review, scheduling the projects concurrently does not appear possible as BWS intends to go out to bid in January 2005 and proceed expeditiously on the BWS Water Project. In addition, based on HECO's review, scheduling the East Oahu Transmission Project concurrently with the City Sewer Project and/or BWS Water Project would not result in any cost savings on the East Oahu Transmission Project.

As set forth below, there are a number of technical constraints that HECO is faced

with in having the projects run concurrently with one another as well as additional challenges in mitigating traffic impacts.

Alternative Alignment 1 coincides with only a portion of the City Sewer Project and/or BWS Water project. BWS's project involves a 12-inch water main installation on Kapi'olani Boulevard between Ward Avenue and Kalākaua Avenue, and a 12-inch water main replacement on Atkinson Drive from Kapi'olani Boulevard to Ala Moana Boulevard. The City's 36-inch sewer main rehabilitation project involves refurbishing the existing 36-inch sewer main on Kapi'olani Boulevard between Ward Avenue and Kalākaua Avenue, and the existing 36-inch sewer main along Kamake'e Street from Kapi'olani Boulevard to Auahi Street. Alternative Alignment 1 would only coincide with the water and sewer projects on Kapio`lani Boulevard from Kāheka Street to Kalākaua Avenue, which is approximately 1,450 feet (i.e., approximately 38%) out of the total 3,800 feet of new ductline proposed from the Makaloa Substation to the McCully Substation for Alternative Alignment 1.

In this particular area where the projects do coincide, HECO, the City and BWS are required to comply with minimum separation distances between waterlines and electrical ductlines and sewer and electrical ductlines in order to facilitate future maintenance and repair work for each respective utility. The minimum separation distances are: 1) 36" between waterlines and electrical ductlines, and 2) 24" between sewer and electrical ductlines. There are also minimum depth and cover requirements that HECO, the City and BWS must comply with. For example, in the City right-of-way, HECO 46kV ductlines are located a minimum of 24 inches below the roadway and 30 inches below the sidewalk. According to the Water System Standards, water mains 12 inches in diameter require a

minimum of 3 feet cover. According to the Design Standards of the Department of Wastewater Management, Volume I, 4 feet minimum cover is required over sewers in paved areas and 3 feet in sidewalk areas. Having all three lines installed in the same trench would result in an increase in cost for everyone due to an increase of excavated and backfilled material that must be used in order to comply with all standards. Having to use wider and deeper trenches in order to accommodate the lines would also have an impact on traffic due to more lane closures and extended work duration for each section of the project.

Another alternative that HECO has looked into is the construction of two separate trenches simultaneously. However, this would result in the closure of two lanes, which the City may not approve, since it will have a major traffic impact on Kapi'olani Boulevard.

Further research has indicated that only a very narrow corridor is available on Kapi'olani Boulevard to install a 46kV underground ductline. Thus, HECO will need to obtain waivers from BWS and other City agencies on the minimum separation distances from their respective facilities in order to install the required 46kV manholes. BWS and the City will probably have encroachment concerns about access to their own lines. In general, waivers are granted only when there are no other options available to locate the lines.

In addition, research indicates that there is a section on Kapi'olani Boulevard (near Atkinson Drive) where there is no corridor available at the typical depth for a 46kV underground ductline. As such, HECO will be required to install the ductline approximately seven feet deeper to avoid conflicts with other lines, which will result in additional costs and lengthen the construction time for that particular area.

Given the Commission's Procedural Schedule, outlined in PUC Order No. 20968 in Docket No. 03-0417, the earliest HECO could begin to construct Alternative Alignment 1

(without some form of interim or expedited approval to proceed with this part of the project) would be early 2006. This assumes HECO is able to obtain the necessary permits and approvals from the City and County of Honolulu in a timely manner. As noted earlier, HECO has been informed by BWS that it plans to go out to bid in January of 2005 and proceed expeditiously on the BWS Water Project. It is also uncertain how much schedule and budget flexibility, if any, the BWS and/or City may have to move the timing of the Kapi'olani portion of their work to coincide with HECO's schedule. Typically, when timing constraints are placed on contractors, it usually comes at a cost. Accordingly, in light of fiscal concerns, BWS and/or the City may not be able to time their work to coincide with HECO's schedule if cost becomes a factor.

c. HECO objects to this request as overly broad to the extent that it asks for "all" documents that "describe, clarify or explain all actions" that HECO may take to utilize Alternative Alignment 1. Without waiving its objections, HECO responds by referring to and incorporating by reference the following documents: (1) the Draft Environmental Assessment for the East O'ahu Transmission Project 46 kV Phased Project, page 5-13, submitted to the Public Utilities Commission in August 2004, which identifies potential government permits and approvals that would need to be obtained for the project; and (2) the drawings and worksheets identified in the response to PO-SIR-1, which must be considered in order to further determine the feasibility of installing new 46kV underground lines in Kapi'olani Boulevard. In addition, a copy of pages 1 and 2 of the "Water System Standards, State of Hawaii, 1985, Volume 1", which establishes minimum clearances between water main lines and other utilities such as underground electric lines, is attached as pages 22-23.

HECO East Oahu Transmission Project, 46kV 2004-33-0800

MEETING MINUTES
Department of Design & Construction
18 March 2004, 1330-1550
Honolulu Municipal Building, 9th Floor Conference Room

Attendees: (see attached sign-in sheet)

Purpose: Seek advice and input from City & County of Honolulu (C&C) agencies on potential direct and cumulative environmental impacts for Environmental Assessment pre-consultation. Obtain updates of information provided last year by C&C agencies.

Discussion:

1. Lesley Matsumoto (LM) introduced the attendees from Hawaiian Electric Company (HECO) and Belt Collins Hawaii (BCH), purpose of meeting, project phases, alignments, and time frame.

2. Larry Leopardi (LL): Width of King St. duct banks?
   Kerstan Wong (KW): Duct banks 4' wide, 5' deep, encased in heat-dissipating concrete.

3. LL: Will horizontal directional drilling (HDD) be used?
   KW: HECO is particularly interested in using HDD at busy intersections such as King Street & Ward Avenue. Use of HDD is dependent on heat dissipation of soils at drilling depth. Another option includes separating the three branches of the 46 kV circuit into separate ducts. Another factor is obtaining lay down area.
4. LL: What portion of King Street would be affected?
   KW: Mauka portion at Cooke Street end and makai portion at McCully Street end.
5. GH: Kapiolani Boulevard rehabilitation (Ward to Kalaukaua) project to start in 2005. DDC Civil Design group involved.
6. FM: Bus Rapid Transit (BRT) shall run along King between Cooke and Pensacola, with a branch on Kapiolani. Phase 2 may coincide with the BRT project.
   KW: Phase 2 schedule is flexible.
7. LL: Why is a busy arterial such as Kapiolani being considered for Phase 1?
   KW: Political area representatives requested that this be considered after Fern Street residents signed a petition.
8. LL: Width of Makaloa St. duct banks?
   KW: Duct banks 4' wide, 2' deep, encased in heat-dissipating concrete.

HECO East Oahu Transmission Project, 46kV 2004-33-0800

9. LL: Alternatives to King St. alignment?
   KM: DPP asked that HECO consider Young Street instead of King. HECO decided against Young St. because of congestion and proposed beautification project.
   JB: Young St. is the planned bike route.
   LL: A Young St. route would have less of an impact.
   KW: A Young St. route would have less of a regional impact, but a greater local impact, i.e., parking or travel lane for residents/businesses.
10. KW: HECO's geotechnical sub-consultant will be drilling at major intersections to collect samples for heat dissipation testing, thus will be approaching C&C to obtain road use permits.
   KM: HECO has not committed to use HDD, only to explore its feasibility.
11. LL: How deep would the HDD go?
   KW: Intersections with large box drains, such as Ward Ave., could be between 20 to 30 feet deep. [Discussed heat dissipation issue, control of drill head in soft/sandy soil]
12. LL: Terminus of Phase 2?
   KW: Power pole at corner of Young and McCully streets.
13. LM: Project also includes improvements/equipment upgrades at sub-stations, largely within fence lines, as shown on figures.
14. GH: Duration for each phase?
   KW: 1 year for Phase 1, 15 months for Phase 2.
15. TF: Will project use microtunneling (MT) or HDD? [TF arrived late, so missed earlier discussion regarding HDD]]
   KW: HECO is exploring its feasibility.
16. TF: Prefer proposed Phase 1 route that does not use Kapiolani Blvd.
17. LM: Reviewed 138 kV island-wide schematic.
   KW: Analogy is that HECO is trying to use several smaller roads to take the place of a necessary highway that the public did not want.
   KM: This project will connect the 8-46kV circuits out of Pukele to the 46 kV circuits at Archer and the 25 kV circuits at Kamoku. The recent East Honolulu outage was due to one of the 138 kV Pukele lines tripping off while the other was down for maintenance.
   KW: This will improve reliability. Outages make last only 6 seconds instead of 4 hours.
18. TF: Will night work be used like the Kapiolani 138 kV project?
   KW: Night work will be used on King St. in areas with no residents. The Dept. of Health (DOH) will pull a variance if it receives citizen complaints.
   KM: It is always a trade off between [traffic] congestion and noise.
   KW: HECO met with residents on the Kapiolani project and set-up a hotline for them to call. Most of their complaints dealt with the temporary metal road

plates, which the contractor had to weld to keep from rattling. This successfully avoided complaints reaching the DOH, thus the variance wasn't pulled.

19. JB: How do you explain to the public how this project solves the missing 138 kV link between Pukele and Kamoku? The link is not obvious. Need a schematic.

GH: The various project elements appear discontinuous and unrelated.

KM: This project will connect the 25kV Kamoku, the 46 kV Pukele, and 46 kV Archer substations.

JB: Those of us in the room that are familiar with the project understand it, but how do you explain it to a layperson?

20. JK: Will check to see whether the previously submitted list of BWS projects has been updated.

21. JK: BWS has a 42" transmission water main in Young St. BWS would prefer that the project not be routed along Young St.

22. TF: A certain percentage of the project will need to be earmarked for handicapped access improvements.

KM: Only if project modifies an intersection corner.

TF: Adding a wheelchair ramp will require relocation of traffic signal vaults or boxes.

JB: All projects will require Disability and Communications Access Board (DCAB) review and DCAB will make you do it [put in wheelchair ramps].

23. TF: DDC is rehabilitating King St. from Alapai to McCully Street right now.

CM: There is a 1-year moratorium on new construction after new roadwork.

AK: Project will probably be completed at the end of 2004, thus this should not affect the proposed King St. route.

24. LM: What about emergency repairs?

LL: Emergencies are excluded from the 1-year moratorium. They have to be done.

25. JH: Does the portion of Phase 1 using existing ducts mean no digging?

KW: Yes.

LL: The Phase 1 Kapiolani alternative route would require a new duct and excavation.

KW: The proposal to re-use an existing duct was not known last year when the alignments were initially developed. It is a recent development after HECO was able to confirm that it was available. HECO will need to update the neighborhood and political representatives.

26. JB: Why does one figure show work for Phase 1 on Pumehana Street while another does not? The figures are inconsistent.

KW: The proposed Pumehana Street improvement is a constant in all alternatives. The other figures are contrasting routes for the portions where they differ.

27. TF: Personal opinion is that King St. is a better route for Phase 2. King St. has 6 lanes, all one way. A lesser percentage of its capacity would be lost. Young St. is 2-way with 1 lane each. Construction would eliminate travel in a direction and parking would need to be eliminated. It is also easier to detour from a 1-way street than a 2-way street.

28. KW: A PUC application has been submitted. After the EA is accepted, the PUC approval would be granted no earlier than 1st or 2nd quarter of 2005. HECO would then submit other permits to C&C, such as CUP for the Archer and Kamoku substations.

29. JB: DTS does not like the Phase 1 Kapiolani route alternative.

Post-Meeting Discussion:

KW: A simplified schematic of how the disparate improvements and existing elements would substitute for the 138 kV line would be helpful for laypersons to comprehend, but we need to be careful that eliminating certain lines could be construed as hiding information. A simplified schematic in the report text that is supplemented with a more comprehensive diagram in an appendix may be acceptable.

SIGN IN SHEET
Hawaiian Electric Company (HECO) and City and County of Honolulu (City) Meeting
March 18, 2004

Environmental Assessment (EA), HECO East Oahu Transmission Project

Name	Organization & Department	Phone & Fax	Email
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Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0

(SAME LETTER SENT TO REP. SCOTT SAI
AND COUNCILMEMBER ANN KOBAYASHI)

Robert A. Alm
Senior Vice President
Public Affairs

December 15, 2003

Honorable Carol Fukunaga
The Senate
State Capitol, Room 216
415 South Beretania Street
Honolulu, Hawaii 96813

Dear Senator Fukunaga:

We received your letter concerning the current proposal to run a 46kV transmission line along Fern Street as part of our East Oahu Transmission Project (EOTP) and appreciate your sharing your concerns with us. We are filing the project application with the Public Utilities Commission as we discussed at the McCully/Moiliili Neighborhood Board Meeting on November 6, 2003. In that filing, we do note that we have examined a Kapiolani Boulevard route and had identified some disadvantages of that route when compared to the proposed alignment along Fern Street. This initial examination led to our selection of the proposed route.

However, this project is in the early stages of the regulatory review and approval process and evaluation of the proposed route and alternative alignments will continue. Given the concerns voiced regarding the Fern Street route, we will continue to specifically look at the Kapiolani routing of this line as was suggested in your letter.

We do appreciate the concerns about such lines and their construction. We would, in that context, note that there are already underground 46kV lines in place along the entire proposed route including Fern Street. In fact, the proposed new 46kV lines are essentially an upgrade of and will replace the existing 46kV lines along the proposed route. There may be some changes in

the use of the lines but in no case are we planning to install the new lines where there are no existing lines. We may even be able to do most of the project by pulling cables through the existing ducts along the proposed route with little digging of new trenches. However, we will not be able to determine this until we get into the ducts. We have, therefore, assumed full trenching along the entire route in our project application. However, this can be adjusted based on the conditions we find in the existing ducts. Thus, the availability of existing duct lines under roadways along the entire proposed route is a significant consideration in its favor.

In a further step to address community concerns, we have also decided to conduct an Environmental Assessment on a voluntary basis. We believe that this will provide the public with greater understanding of the potential impacts of this project.

Regarding the issue of electric and magnetic fields, we again would like to cite the Department of Health policy which states that "research data on possible adverse health effects, including cancer, are inconclusive" and recommends a "prudent avoidance" approach, stating "reasonable, practical, simple and relatively inexpensive actions should be considered to reduce exposure (to EMF)." We will continue to monitor developments in this area.

Again, we deeply appreciate your concerns for your communities and we look forward to continuing our discussions with you and the communities you serve.

Sincerely,

Robert A. Alm
Senior Vice President

RAA:kh

City and County of Honolulu • State of Hawaii

December 1, 2003

Mr. Robert Alm
Senior Vice President, Public Affairs
Hawaiian Electric Company
P.O. Box 2750
Honolulu, Hawaii 96840

Dear Mr. Alm:

RE: Installation of 46kV Underground Power Transmission Lines in the McCully/Moiliili Neighborhoods

We are writing on behalf of Fern Street residents who submitted their petition opposing HECO's use of Fern Street in its proposed Phase 1 East Oahu Transmission Project, based on HECO's presentation at the November 6, 2003 McCully/Mo`ili`ili Neighborhood Board meeting.

Residents along Fern Street have expressed concerns about electric and magnetic fields (EMFs) emissions that may cause some degree of increased risk of childhood leukemia, adult brain cancer, Lou Gehrig's Disease and miscarriages.

We request that HECO consider using a larger, non-residential thoroughfare such as Kapiolani Boulevard for routing its Phase 1 East Oahu Transmission Project. We also request that HECO provide us with factual information that addresses the potential health consequences relating to the resultant EMFs, so that we can respond to our constituents.

We'd appreciate your attention to these requests; and request a written response by December 15, 2003. If you have any questions, please contact Representative Scott Saiki at 586-8485.

Sincerely,

Senator Carol Fukunaga
District 11 (Makiki-Ala Moana, McCully)

Representative Scott Saiki
District 22 (McCully-Moiliili-Kaheka)

Councilmember Ann Kobayashi
District 5 (Manoa/McCully-Moiliili

City and County of Honolulu • State of Hawaii

October 8, 2004

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PUBLIC UTILITIES
COMMISSION

Carlito Caliboso, Chair
Janet Kawelo, Member
Wayne Kimura, Member
Public Utilities Commission

Dear Mr. Caliboso, Ms. Kawelo, and Mr. Kimura:

SUBJECT: East Oahu Transmission Project (Docket No. 03-0417)

Chair Caliboso and members of the Commission, thank you for the opportunity to testify on this significant concern of our constituency.

We understand that there are many other concerned citizens that have expressed or will be expressing their concerns on various aspects of this proposed project. For the purpose of brevity, we will focus our comments on HECO's recommended routing of its 46kV transmission line as proposed in Phase 1 of this proposed project (installation of a 46kV transmission line between the Makaloa and McCully Substations). We believe that HECO should utilize the route identified as Alternative Alignment 1 in its Draft Environmental Assessment instead of its recommended proposal.

HECO's proposal is that the 46kV transmission line be routed through a largely residential area and alongside Lunalilo School. Due to the potential health risks to children that exposure to electromagnetic fields (EMF) poses, we recommend that HECO utilize the alternative alignment it describes in its Draft Environmental Assessment, (Alternative Alignment 1, Item 3.2.2.1.1, page 3-45-46), as the preferred transmission line alignment. This alternative alignment would route the transmission line primarily along Kapiolani Boulevard, thus avoiding potential exposure by the students and faculty of Lunalilo School to EMFs emitted by the transmission line.

Under HECO's recommended proposal, in certain areas, existing ductlines and conduits will be used for the routing of 46kV transmission line. According to the information provided by HECO, much of this existing ductline is routed under, or very close to, existing residences and Lunalilo School, particularly in the Fern Street area. HECO's recommendation would put the 46kV transmission lines closer to where people live, work, and go to school, thus increasing their exposure to EMFs.

Although no "smoking gun" has been found that directly links EMF exposure to certain diseases, EMF exposure has been linked to the occurrence of childhood leukemia by the National Institute of Environmental Health Sciences (NIEHS). In addition, in a recent risk evaluation conducted by three scientists on behalf of the California Public Utilities Commission, all three scientists were inclined to believe that EMF exposure can cause some degree of increased risk of childhood leukemia, adult brain cancer, Lou Gehrig's Disease, and miscarriage (Executive Summary, California EMF Risk Evaluation Study 2002).

We understand that HECO's position on EMF exposure is that studies have indicated that there is no conclusive evidence that links power line configurations (wire codes) with illnesses such as childhood leukemia. However, the NIEHS states that, although there is no conclusive evidence linking power line configurations to childhood leukemia, there is an association between measured fields of EMFs and childhood leukemia.

In fact, in a recent meta-analysis of nineteen studies related to residential EMF exposure and childhood leukemia conducted by Daniel Wartenberg, PhD, and funded by the Public Health Institute of the California Department of Health Services and the NIEHS, Dr, Wartenberg determined that it was not uncommon for individual EMF studies to be inconclusive with regard to finding a link between EMF exposure and childhood leukemia. However, his meta-analysis found that when the results of the studies he reviewed are combined, ". . . many people believe there are no data to support an association between residential magnetic field exposure and childhood leukemia. To the contrary, the data strongly and relatively consistently support such an association, although the estimated magnitude of risk is moderate." The meta-analysis goes on to conclude that, "[i]f one chooses to use these summary estimates for interpretation, given the widespread exposure to magnetic fields the suggest perhaps as much as a 15-25% increase in the childhood leukemia rate, which is a large and important public health impact."[1]

It can be argued that the findings of this meta-analysis carry more credibility than findings of an individual study in that when utilized properly, meta-analytic tools create a composite estimate with greater statistical power than individual studies.

According to our review of existing research material on this issue, of the forty-four studies conducted across the world on this issue since 1979, ten studies found some association between EMFs and an adverse human health condition. Of those ten, seven found an increased health risk to children.

Exposure to measured fields of EMFs can be likened to the constant adding of additional weight (additional EMF exposure) to a camel's back (human body). At some point, any additional weight (EMF exposure) will cause the camel's back to

[1] Wartenberg D. Residential EMF Exposure and Childhood Leukemia: Meta-Analysis and Population Attributable Risk. Bioelectromagnetics Supplement 5: S86-S104, 2001

break or, in the case of a human, adverse consequences to the person's health and well being. While a certain amount of EMF exposure is unavoidable in our everyday lives (e.g., EMFs emitted from televisions, microwave ovens, etc.), we as a society can do something about lessening the amount of any additional EMF exposures experienced by our citizens. Aligning HECO's 46kV transmission line along HECO's proposed Alternate Alignment 1 would help avoid the unnecessary additional EMF exposure by humans along Fern Street and at Lunalilo School because it would: (1) require HECO to route its power line down the middle of Pumehana Street, rather than close to residences as proposed in HECO's recommendation; and (2) avoid additional EMF exposure to children attending Lunalilo School.

Regardless of findings that power line configurations probably have limited, if any, effect on human health and well being, the fact that another significant emitter of EMFs is being placed in a residential area and next to Lunalilo School only increases the risk of additional long term exposure to EMFs. Studies have indicated that, at certain measured levels, long term exposure to EMFs have been linked to human illness (e.g., chronic lymphocytic .leukemia in adults and childhood leukemia).

With this in mind, the most prudent and logical course of action would be to keep large-scale EMF emitters (e.g., 46kV transmission lines) away from schools and residences. Although routing the proposed 46kV transmission line between the Makaloa and McCully Substations would be more cost effective for HECO since it utilizes, to a certain extent, existing ductlines; in the long term, the potential health risk to area residents (since existing ductlines and conduits are so close to residences) and to schoolchildren outweighs HECO's short-term cost savings on this project.

In its Draft Environmental Assessment, HECO states that if the Alternative Alignment 1 is used, additional inconvenience may be encountered by motorists due to the need to excavate sections of Kapiolani Boulevard in order to underground the 46kV transmission line. However, this inconvenience to motorists and immediate area residents could be easily mitigated, and the construction costs to HECO minimized, if HECO collaborated with the Honolulu Board of Water Supply in its existing eighteen-month Kapiolani Boulevard water and sewer line improvement project.

We contacted Clifford S. Jamile, Manager and Chief Engineer of the Honolulu Board of Water Supply, and obtained an outline of their project's scope, timeline (see attached correspondence from Board of Water Supply). According to the Board of Water Supply's project outline, the Board's Kapiolani Boulevard water and sewer line improvement project is anticipated to begin on July 5, 2005, and scheduled to be completed on March 31, 2007.

This water and sewer line improvement project tracks along the exact same traffic corridor as HECO's Alternative Alignment 1, with the exception of the diversion up Kaheka Street and onto Makaloa Street on the westernmost section, and the extension from Kalakaua Boulevard and onto Pumehana Street on the southeasternmost boundary of HECO's Alternative Alignment 1. The project timeline of the Board of

Water Supply's project could coincide with HECO's 46kV transmission line installation project. If HECO collaborates with the Board of Water Supply and coordinates the implementation of their respective projects, both entities could realize reduced construction costs and lessen the inconvenience to area residents and motorists.

As such, we believe that by utilizing the Alternative Alignment 1 of HECO's Draft Environmental Assessment HECO has the opportunity to safeguard the health of area residents and Lunalilo School attendees by ensuring that the 46kV transmission line is aligned in a manner that, as much as possible, mitigates the potential adverse effects of EMF exposure. Use of the Alternative Alignment 1 also provides an opportunity for the private (HECO) and public sector (Board of Water Supply) to work together to lessen inconveniences to the public and to reduce costs. Such collaboration would truly be a "win-win" solution to this issue and serve as a model for public/private sector collaboration.

In closing, we ask that the Commission accede to the community's request to require HECO to reroute its proposed installation of a 46kV transmission line between the Makaloa and McCully Substations from its current proposed route to a route that primarily follows Kapiolani Boulevard as described in Alternative Alignment 1 of its Draft Environmental Assessment.

Sincerely,

Carol Fukunaga, Senator
11th District (Makiki-Pawaa-Punchbowl)
Hawaii State Senate

Scott K. Saiki, Representative
22nd District (Moiliili-McCully-Kaimuki)
Hawaii State House of Representatives

Ann Kobayashi, Councilwoman
5th District (Kaimuki-Manoa-McCully-Kakaako)
City Council of the City and County of Honolulu

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

October 1, 2004

The Honorable Carol Fukunaga
Senate
State Capitol, Room 216
Honolulu, Hawaii 96813

Dear Senator Fukunaga:

Subject: Your Letter of September 30, 2004 on Timeline for Kapiolani Boulevard Water Line Project

Our 12-inch water main along Kapiolani Boulevard is to be installed during the same time frame as the rehabilitation of the 36-inch sewer main from Kalakaua Avenue to Ward Avenue. In addition, the 12-inch water main along Atkinson Drive from Kapiolani Boulevard to Ala Moana Boulevard will be replaced, and the 36-inch sewer main along Kamakee Street from Kapiolani Boulevard to Auahi Street will be rehabilitated.

We will solicit bids on the joint project in mid-January 2005 and begin construction in May 2005. The duration of the project is 18 months with a completion of late October 2006. After the installation of the water and sewer mains, Kapiolani Boulevard will be resurfaced under a separate contract.

If you have any questions, please contact Howard Tanaka at 748-5700.

Very truly yours,

FOR CLIFFORD S. JAMILE
Manager and Chief Engineer

KAPIOLANI BOULEVARD WATER AND SEWER LINE IMPROVEMENTS

PROJECT SCHEDULE

6-Oct-04

Notes: 1) Tentatively, no construction will be allowed from November 22 to January 3. (Dates to be revised as required.)
2) Night work will be utilitized to the maximum extent possible

Plans and Specifications	October 15, 2004	
File Noise Variance	November 1, 2004	
Public Relations Public Meetings (4 meetings) Business Meetings The Bus Oahu Transportation Orgainization Waikiki Business Association Ala Moana Center Hawaii Convention Center Hawaiian Groups etc....	December 1, 2004 to	March 31, 2007
Approval by DPP	January 31, 2005	
Final Noise Variance Approval	Februray 15, 2005	
Advertise & Bid	February 14, 2005	
Bid Opening	March 24, 2005	
Complete Contract Execution	May 2, 2005	
NTP	May 16, 2005	
Start Construction	July 5, 2005	
Kapiolani Boulevard from Ward to Kamakee Water line Replacement Work		
Kapiolani Boulevard from Kamakee to Kalakaua Sewer Rehabilitation Work Water line Replacement Work Curb Ramp Upgrade (7 Each)		
Kamakee Street from Auahi to Kapiolani Sewer Rehabilitation Work		
Atkinson from Kapiolani to Ala Moana Water line Replacement Work Curb Ramp Upgrade (2 Each)		
Kalakaua Anvenue from Ala Wai Bridge to Kapiolani Construction Sewer Force Main and Appertenances		
Project completion	March 31, 2007	

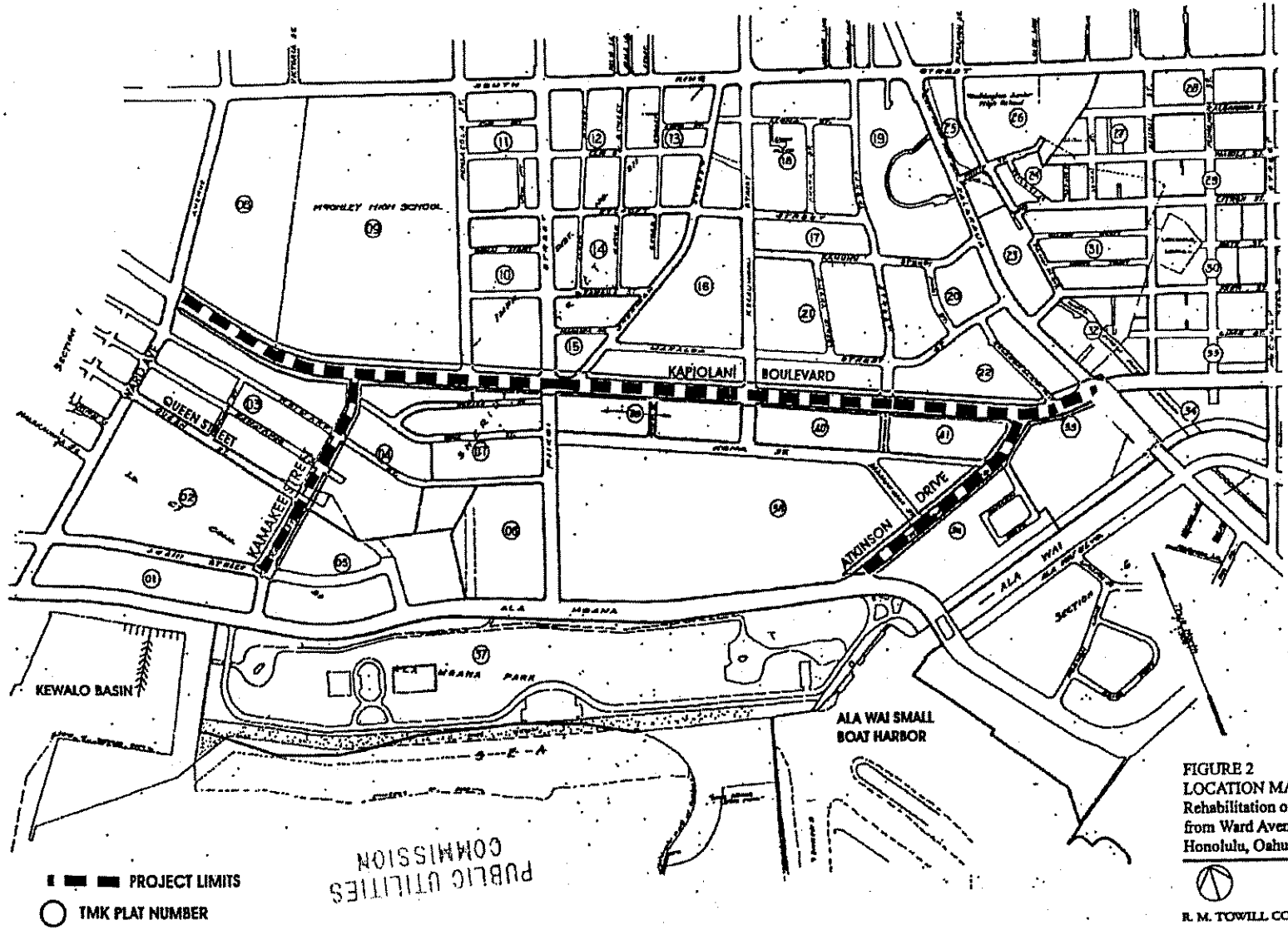

FIGURE 2
LOCATION MAP - TMK PLATS 1-2-3-XX
Rehabilitation of Streets, Kapiolani Boulevard
from Ward Avenue to Kalakaua Avenue
Honolulu, Oahu, Hawaii

NOT TO SCALE

R. M. TOWILL CORPORATION April 2003

PUC Filing				
Item	**Quantity**	**Unit**	**Unit Cost**	**Total**
8-5" Ducts (High Water Table)	3450	LF	$ 272	$ 937,365
Manhole 6' x 14' (High Water Table)	9	EA	$ 66,000	$ 594,000
				$ 1,531,365
			Total	**$ 1,531,365**

PUC Filing	
Transmission Planning	72
CSA - Design UG Transmission DuctLine/Trench	2,004
CSA - Drafting	2,004
Electrical - Design OH/UG Trans Line	1,512
Electrical - Drafting	348
Project Permitting	144
OH Transm Line - Construction - Electrical- Switching	96
UG Transm Line - Construction - Electrical- Crews	1,404
UG Transm Line - Inspection	852
UG Transm Line - Supervisor - UG Crew	132
Construction Management	$ 240,000
Electrical - UG Stock Materials Cost	$ 351,000
Traffic Control	$ 500,004
UG Transm Line - CSA Outside Construction	$ 1,531,365

Mak-McC UG Line (till 12/31/07)	$ 3,720,169	
AFUDC Mak-McC Line (till 12/31/07)	$ 217,511	
Mak-McC UG Line (from 1/01/08 +)	$ -	
AFUDC Mak-McC Line (fr 1/01/08 +)	$ -	
Total	$ -	$ 3,937,680

Engineering and Construction Costs	$ 3,937,680
$/Foot	$ 1,141

Therefore, approximately $1,100 per foot

Alternative 1	
Length in feet	3800
Cost per foot	$ 1,100
Total	$ 4,180,000

PART I

Excerpt from the
"Water System Standards,
State of Hawaii, 1985, Volume 1"

PART I - PLANNING

SECTION 1 - WATER MAINS AND APPURTENANCES

1.1 General. All proposed work shown in the Plans submitted to the Manager for approval shall be designed according to these Standards unless otherwise directed by the Manager.

The Manager may grant exception to the Standards to permit reasonable utilization of engineering judgment while at the same time securing substantial conformance with the objectives of these Standards.

1.2 Mains

1.2.1 Location. Mains, other than those installed in easements or rights-of-way, shall be located in the paved street area at the respective distances from the face of curb as listed below unless otherwise required to clear obstructions:

Island	Feet
Hawaii, Kauai	5
Maui, Oahu	10

Within easements and rights-of-way, mains shall be located as determined by the Manager.

In case of extra wide streets, the Manager may require that two parallel, interconnected mains be installed, one on each side of the street. Sizes and other details in such cases shall be as approved by the Manager.

On side hill streets, the main shall, where possible, be located on the cut side of the center line of the street.

Where practicable, mains shall be located on the high side of super-elevated curves.

No gas or sewer main, electric or telephone duct or other utility line shall be installed in the same trench with water mains.

Minimum horizontal and vertical clearances between water mains and other utilities are listed below. Wherever possible water mains shall be installed at a higher elevation than sewer mains. Whenever concrete jackets are involved,

PART I

clearances shall be total clear distance between the concrete jacket and utility concerned.

Island	Horizontal (Feet)	Vertical (Inches)
Hawaii	8	18*
Kauai, Maui, Oahu	3	6

* Provided other utility mains are concrete jacketed.

1.2.2 Pipeline Easements. Water pipeline easements shall be granted to the department for all waterlines to be conveyed to the department which are located within private property and roadways that will not be dedicated to the City/County. The minimum width of easements shall be as listed in Table 1.

1.2.3 Cover. Invert grades of water mains shall be such as to provide minimum cover requirements as specified in Table 2 and also to assure proper clearance between top of valves and manhole covers or valve box covers as provided in the section on Main Valves.

TABLE 2 - COVER FOR WATER MAINS (FEET)

	Diameter						
Island	Smaller than 4-Inch	4-Inch	6-Inch	8-Inch	12-Inch	Larger than 12-Inch	Maximum for All Mains
Maui, Oahu	1.5	2.5	3.0	3.0	3.0	3.0	8
Hawaii	1.5	1.5	1.75	2.0	2.5	3.0	5

	Asbestos Cement Pipe Class 150	Asbestos Cement Pipe Class 200	PVC 1120	PVC 200 psi	Ductile Iron	Maximum for All Mains
Kauai	3	2	3	2	1.5	8